

4. TiO₂

Date	Tochigi					
	January 9	January 22	January 25	February 6	February 20	February 25
Grains smaller than 0.044 mm ² %	0.02	0.08	0.079	0.11	0.07	0.055
Moisture %	0.30	0.53	0.33	0.22	0.50	0.47
Ignition loss %	0.44	1.07	0.44	0.48	0.69	0.62
Water soluble matter %	0.03	0.14	0.10	0.80	0.10	0.45
Fe ₂ O ₃ %	0.059	0.01	0.009	0.006	0.015	0.01
TiO ₂ %	97.50	96.07	97.47	98.40	98.83	98.42
CaO %		0.118	0.123	0.089	0.09	0.134
SO ₃ %	0.004	0.008	0.011	0.029	0.0088	0.017
K ₂ S ₂ O ₇ Insol. matter %	0.7	0.97	0.40	0.84	0.40	0.35
Sp. gr.	3.51	3.49	3.52	3.60	3.61	3.60

5. Na₂SO₃·7H₂O

	January 9	February 1	February 3
Na ₂ SO ₃ ·7H ₂ O %	89.08	90.50	92.04
Na ₂ SO ₃ %	3.18	3.65	2.89
Water Insol. matter %	---	0.007	0.015

(II) Manufacturing Conditions

Kind of Product:

Bright, 120 Dr. rayon yarn

(A) Viscose Section:

(1) Recovery of Waste Soda

Regular Operation of Dialysers

		Quantity	Temp.	Caustic conc.	Hemi-cell. content
Inflow	Press soda	1,300 ^{cc/min.}	30°C	216 g/L	15.7 g/L
	Soft water	2,600	34	0.4 "	---
Outflow	Recovered soda	2,700	29	110	1.0 - 3.0
	Waste soda	1,200	30	10.0	12.0-13.0

Note: 1. Efficiency of recovery 96%
2. Life of parchment paper 28 days
3. Maker of parchment paper Osaka Shiko
4. Efficiency of hemi-cellulose elimination 75%

(2) Preparation of soda-cellulose

1) Blending of pulp

Brand	Percentage
"Hercules" Cotton Linter	10 %
C. D. Extra	30
Corona Super 1	40
Modosilk	20

ii) Moisture control of pulp

Temp. of heating box	40°C
Heating hours	16 h.
Moisture of pulp after controlled	5.5 %

iii) Steeping and pressing

Weight of pulp for one batch	200 kg.
Quantity of steep soda for one batch	4,400 L.
Number of sections of steeping press	47 sections
Press ratio	2.7 times original weight

a. Concentration of steeping liquor

NaOH	230 g/L (± 0.1)
Na ₂ CO ₃	2.0 "
Fe ₂ O ₃	0.0013 %
Hemi-cellulose	4.5 g/L (± 0.5)

b. Steeping temperature

Temp. of inflow steep soda	14°C
Temp. of liquor at the start of steeping	16°C
Temp. of liquor at the end of steeping	17.5°C

c. One cycle of the operation on the steeping press.

Charging of pulp	10 min.
Filling up of soda	25 "
Steeping	120 "
Running off of soda	15 "
Pressing	30 "
Back motion of press cylinder	15 "
Total	215 min.

(Note) Steep rate 1.2 inches/min.

iv) Shredding

Shredding hours	60 min.
Temp. at shredding	21 - 25°C

v) Composition of soda-cellulose

Total alkali	15.2% (+0.15)
Cellulose	33.1% (+0.30)

(3) Aging, Xanthating and Dissolving

Xanthating unit	2 batches
Adding CS ₂ , wt. percent for α-cellulose	36 %
Adding Na ₂ SO ₃ ,	" 5 %
Adding TiO ₂ ,	" 1.10 %
Highest temp. at aging	47°C
Temp. at the start of xanthating	23°C
Temp. at the end of xanthating	25°C
Temp. at the end of dissolving	14°C
Vacuum degree in the kneader at the stage of xanthating	500 mmHg
Total quantity of viscose	4,000 L

i) One cycle of the operation on the vacuum kneader

Charging of soda-cellulose	20 min.
Heating	45 "
Ageing	195 "
Cooling	90 "
Xanthation	160 "
Dissolving	180 "
Discharging of viscose	20 "
Washing	30 "

Drying	40 min.
Vacuum test	10 "
Total	790 min.

(Note)

Temp. of hot water	56°C
Temp. of cold water	4°C

ii) Composition of viscose

Cellulose	8.03 %
Alkali	6.27 %

(4) Mixing

Mixing unit	4 batches
Mixing hours of viscose	180 min.
Discharging hours of viscose	20 "
Temp. at the end of mixing	21°C
Viscosity of viscose at the end of mixing (by the Kurashiki-type viscosimeter)	145 sec.

(5) Filtration and ripening of viscose

1) Filtration

a. Filter cloth

1st filter	Flannel No.9 (J.E.S.) x 2
	Flannel No.9 (J.E.S.) x 2
2nd filter	Flannel No.3A(") x 1
	Flannel No.9 (") x 3
3rd filter	Flannel No.3A(") x 1
	Calico No.4B(") x 1

b. Filtering pressure

1st filter	2.5 kg/cm ²
2nd filter	2.0 "
3rd filter	2.0 "

c. Filtration hours

1st filter	4 hours
2nd filter	3 "
3rd filter	3 "

ii) Ripening

Ripening temp.	21°C(±0.2)
Ripening hours	50 h.(± 2)
Ripening degree at the beginning of spinning	10.5cc(± 0.2)
Viscosity of viscose at the beginning of spinning (by the Kurashiki-type viscosimeter)	115 sec.(± 4)

(6) Air-conditioning at the viscose section

Pulp preparation room	}	Temp.	18.5°C
Steeping room		Humidity	75 %
Ripening room		Temp.	21°C

(B) Spinning Section:

(1) Spinning conditions

Spinning speed	80 m/min.
Immersion length	100 mm.
Angle of stretch	46°
Traverse	17 or 20 times/min.
Revolution of pot	7,800 rpm.
Diameter of pot	172 mmφ

Number of nozzles per one spinning machine	100 nozzles
Output per day ^{per} one spinning machine	290 lb/day
Quantity of viscose flowing out by gear pump	9.5 cc/min.
Doffing hours	5 ^{h.} 20 ^{min.} or 4 ^{h.} 48 ^{min.}
Size of spinnerettes	50 x 0.08 x 12 x 17 x 5

(2) Coagulating bath

Sp. gr. of bath	1.290
Conc. of H ₂ SO ₄	135 g/L
Conc. of ZnSO ₄	25 g/L
Conc. of Na ₂ SO ₄	260 g/L
Temp. of bath	48°C
Bath supply quantity per one spinning machine	3,000 l/hr.

(3) Air-conditioning of the spinning room

Ventilation time of spinning room	35 times/hr.
Temp. of spinning room	20°C
Humidity of spinning room	80 %
Temp. of cake room	22°C
Humidity of cake room	90 %

(4) Regulation and cleaning of spinning machines

Adjusting of viscose gear pump	every 7 days
Regular cleaning and repairing of spinning machines	every 20 days
Candle exchange	every 30 days

(C) After-treatment Section:

(1) Reeling

Revolution of swift	300 rpm.
Number of revolution per one skein	4,350 times

Reeling method	4 lea yarn
Temp. of reeling room	22°C
Humidity of reeling room	80 %
(2) Skein bleaching and drying	
Total bleaching hours	79 min.
Number of skeins per one rod	40 skeins
Output per one bleaching machine per hour	8,749 skeins
Conc. of Na ₂ S liquor	10 g/L
Temp. of Na ₂ S liquor	55°C
Conc. of bleaching liquor	0.4 g/L
Conc. of exalic acid in the souring liquor	0.4 g/L
Conc. of oiling liquor	1.5 g/L
Temp. of oiling liquor	50°C
Revolution of hydroextractor	880 rpm.
Dehydration hour	10 min.
Drying hours	240 min.
Number of skeins per one dryer rod	14 skeins
Output per one dryer per hour	3,096 skeins
Highest temp. in dryer	80°C
(3) Cake bleaching and drying	
Total bleaching hours	380 min.
Number of cakes per one rod	10 cakes
Output per one bleaching machine per hour	350 cakes
Revolution of dehydration pot	3,600 rpm.
Drying hours	36 hours.
Number of cakes per one dryer rod	18 cakes
Output per one dryer per day	5,568 cakes (=232 cakes/hour)

(4) Winding

Winding speed	160 m/min.
Size and weight of cone	2.78 lb. in weight
	158 mm in height
	41 mm in thickness
	3°30" in tapered angle
Temp. of winding room	20°C
Humidity of winding room	60 %

(III) Results of the plant operation

(A) Production

The production quantity of skein and cone is classified as follows:

Sept.	<u>100 D semi-dull (40 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
		lb.	lb.	lb.	
	1st grade	40,200	16,600	56,800	74.2
	2nd grade	10,100		10,100	13.2
	3rd grade	5,400		5,400	7.0
	4th grade	4,300		4,300	5.6
	<u>Total</u>	<u>60,000</u>	<u>16,600</u>	<u>76,600</u>	<u>100 %</u>

	<u>120 D semi-dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
	1st grade	64,000	53,000	117,000	76.9
	2nd grade	16,800		16,800	11.0
	3rd grade	10,300		10,300	6.8
	4th grade	8,000		8,000	5.3
	<u>Total</u>	<u>99,100</u>	<u>53,000</u>	<u>152,100</u>	<u>100.0%</u>

	<u>120 D dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
	1st grade	10,100	15,200	25,300	74.2
	2nd grade	3,400		3,400	10.0
	3rd grade	2,200		2,200	6.4
	4th grade	3,200		3,200	9.4
	<u>Total</u>	<u>18,900</u>	<u>15,200</u>	<u>34,100</u>	<u>100 %</u>

<u>150 D dull</u> <u>(50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	8,800	20,200	29,000	78.4
2nd grade	1,200		1,200	3.2
3rd grade	700		700	1.9
4th grade	6,100		6,100	16.5
<u>Total</u>	<u>16,800</u>	<u>20,200</u>	<u>37,000</u>	<u>100 %</u>

Oct. <u>75 D semi-dull</u> <u>(30 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	3,500		3,500	70.0
2nd grade	900		900	18.0
3rd grade	400		400	8.0
4th grade	200		200	4.0
<u>Total</u>	<u>5,000</u>		<u>5,000</u>	<u>100 %</u>

<u>100 D semi-dull</u> <u>(40 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	44,600	33,000	77,600	82.1
2nd grade	8,400		8,400	8.9
3rd grade	3,600		3,600	3.8
4th grade	4,900		4,900	5.2
<u>Total</u>	<u>61,500</u>	<u>33,000</u>	<u>94,500</u>	<u>100 %</u>

<u>120 D semi-dull</u> <u>(50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	90,600	69,840	160,440	81.5
2nd grade	17,800		17,800	9.0
3rd grade	8,900		8,900	4.5
4th grade	9,900		9,900	5.0
<u>Total</u>	<u>127,200</u>	<u>69,840</u>	<u>197,040</u>	<u>100 %</u>

<u>120 D dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade				
2nd grade				
3rd grade				
4th grade	200		200	100
<u>Total</u>	<u>200</u>		<u>200</u>	<u>100 %</u>

<u>150 D dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	800	400	1,200	38.7
2nd grade	400		400	12.9
3rd grade	200		200	6.5
4th grade	1,300		1,300	41.9
<u>Total</u>	<u>2,700</u>	<u>400</u>	<u>3,100</u>	<u>100 %</u>

Nov.	<u>75 D semi-dull (30 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
	1st grade	1,150		1,150	63.9
	2nd grade	250		250	13.8
	3rd grade	100		100	5.6
	4th grade	300		300	16.7
	<u>Total</u>	<u>1,800</u>		<u>1,800</u>	<u>100 %</u>

	<u>100 D semi-dull (40 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
	1st grade	47,300	44,800	92,100	86.1
	2nd grade	7,400		7,400	6.9
	3rd grade	3,800		3,800	3.5
	4th grade	3,800		3,800	3.5
	<u>Total</u>	<u>62,300</u>	<u>44,800</u>	<u>107,100</u>	<u>100.0 %</u>

<u>120 D semi-dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	116,600	86,400	203,000	84.4
2nd grade	17,800		17,800	7.4
3rd grade	9,100		9,100	3.8
4th grade	10,500		10,500	4.4
<u>Total</u>	<u>154,000</u>	<u>86,400</u>	<u>240,400</u>	<u>100 %</u>

<u>120 D dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	200		200	36.4
2nd grade				
3rd grade	150		150	27.2
4th grade	200		200	36.4
<u>Total</u>	<u>550</u>		<u>550</u>	<u>100 %</u>

<u>150 D dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	200	200	400	24.2
2nd grade	150		150	9.1
3rd grade	100		100	6.1
4th grade	1,000		1,000	60.6
<u>Total</u>	<u>1,450</u>	<u>200</u>	<u>1,650</u>	<u>100 %</u>

<u>Dec. 60 D semi-dull (30 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	250		250	35.7
2nd grade	250		250	35.7
3rd grade	100		100	14.3
4th grade	100		100	14.3
<u>Total</u>	<u>700</u>		<u>700</u>	<u>100 %</u>

<u>100 D semi-dull (40 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	47,500	40,600	88,100	87.5
2nd grade	5,300		5,300	5.2
3rd grade	2,700		2,700	2.7
4th grade	4,600		4,600	4.6
<u>Total</u>	<u>60,100</u>	<u>40,600</u>	<u>100,700</u>	<u>100 %</u>

<u>120 D semi-dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	132,900	78,800	211,700	84.7
2nd grade	15,900		15,900	6.5
3rd grade	11,000		11,000	4.4
4th grade	11,000		11,000	4.4
<u>Total</u>	<u>170,800</u>	<u>78,800</u>	<u>249,600</u>	<u>100 %</u>

Jan.	<u>100 D semi-dull (40 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
	1st grade	36,100	48,700	84,800	87.0
	2nd grade	5,100		5,100	5.2
	3rd grade	2,600		2,600	2.7
	4th grade	5,000		5,000	5.1
	<u>Total</u>	<u>48,800</u>	<u>48,700</u>	<u>97,500</u>	<u>100.0%</u>

<u>120 D semi-dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	131,200	87,600	218,800	84.8
2nd grade	21,400		21,400	8.2
3rd grade	9,000		9,000	3.5
4th grade	9,000		9,000	3.5
<u>Total</u>	<u>170,600</u>	<u>87,600</u>	<u>258,200</u>	<u>100 %</u>

Feb.	<u>75 D semi-dull (30 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
	1st grade	50	1,000	1,050	95.5
	2nd grade				
	3rd grade				
	4th grade	50		50	4.5
	<u>Total</u>	<u>100</u>	<u>1,000</u>	<u>1,100</u>	<u>100 %</u>

	<u>120 D semi-dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
	1st grade	169,100	144,600	313,700	85.6
	2nd grade	27,400		27,400	7.5
	3rd grade	12,100		12,100	3.3
	4th grade	13,307		13,307	3.6
	<u>Total</u>	<u>221,907</u>	<u>144,600</u>	<u>366,507</u>	<u>100 %</u>

Mar.	<u>120 D semi-dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
	1st grade	196,900	129,200	326,100	81.3
	2nd grade	34,700		34,700	8.6
	3rd grade	20,900		20,900	5.2
	4th grade	19,700		19,700	4.9
	<u>Total</u>	<u>272,200</u>	<u>129,200</u>	<u>401,400</u>	<u>100 %</u>

	<u>150 D semi-dull (50 filament)</u>	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
	1st grade	1,200		1,200	72.7
	2nd grade	300		300	18.2
	3rd grade	100		100	6.1
	4th grade	50		50	3.0
	<u>Total</u>	<u>1,650</u>		<u>1,650</u>	<u>100 %</u>

April 120 D semi-dull (50 filament)	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	176,100	130,600	306,700	79.4
2nd grade	34,900		34,900	9.0
3rd grade	29,000		29,000	7.5
4th grade	15,800		15,800	4.1
<u>Total</u>	<u>255,800</u>	<u>130,600</u>	<u>386,400</u>	<u>100.0%</u>

May 120 D bright (25 filament)	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	124,000	41,700	165,700	91.5
2nd grade	7,800		7,800	4.3
3rd grade	6,600		6,600	3.6
4th grade	1,100		1,100	0.6
<u>Total</u>	<u>139,500</u>	<u>41,700</u>	<u>181,200</u>	<u>100 %</u>

120 D semi-dull (50 filament)	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	40,750	24,150	64,900	82.5
2nd grade	5,350		5,350	6.8
3rd grade	4,100		4,100	5.2
4th grade	4,300		4,300	5.5
<u>Total</u>	<u>54,500</u>	<u>24,150</u>	<u>78,650</u>	<u>100 %</u>

120 D dull (50 filament)	<u>Skein</u>	<u>Cone</u>	<u>Total</u>	<u>Percentage</u>
1st grade	72,800	41,200	114,000	81.4
2nd grade	12,300		12,300	8.8
3rd grade	8,800		8,800	6.3
4th grade	5,000		5,000	3.5
<u>Total</u>	<u>98,900</u>	<u>41,200</u>	<u>140,100</u>	<u>100 %</u>

(B) Quality

Average tenacity and elongation of the product, are cited as follows:

	Dry Tenacity	Dry Elongation	Wet Tenacity	Wet Elongation
	g/d	%	g/d	%
Sept. 100 D semi-dull Skein	1.74	18.8	0.84	28.6
Cone	1.77	18.0	0.77	23.8
120 D semi-dull Skein	1.68	19.0	0.81	28.5
Cone	1.70	18.8	0.76	25.2
120 D dull Skein	1.61	18.1	0.75	25.8
Cone	1.60	18.2	0.67	25.0
150 D dull Skein	1.73	17.8	0.80	27.5
Oct. 75 D semi-dull Skein	1.70	20.4	0.79	29.7
Cone	1.75	20.2	0.79	27.3
100D semi-dull Skein	1.81	19.9	0.86	30.4
Cone	1.81	19.6	0.79	25.8
120 D semi-dull Skein	1.77	19.8	0.85	30.7
Cone	1.81	19.7	0.79	26.9
Nov. 75 D semi-dull Skein	1.70	20.4	0.79	29.7
100 D semi-dull Skein	1.89	20.2	0.90	28.9
Cone	1.91	20.4	0.84	27.6
120 D semi-dull Skein	1.86	20.5	0.88	29.7
Cone	1.91	20.3	0.85	27.1

	120 D dull Skein	1.61	19.8	0.78	30.9
	150 D dull Skein	1.72	19.0	0.78	26.8
	Cone	1.77	19.8	0.80	29.1
Dec.	60 D semi-dull Skein	1.71	20.0	0.76	27.0
	100 D semi-dull Skein	1.86	19.0	0.90	29.1
	Cone	1.90	19.0	0.87	26.8
	120 D semi-dull Skein	1.86	19.5	0.88	30.0
	Cone	1.89	18.9	0.85	27.3
Jan.	100 D semi-dull Skein	1.86	17.7	0.91	27.7
	Cone	1.90	17.8	0.88	25.6
	120 D semi-dull Skein	1.87	18.4	0.89	28.3
	Cone	1.90	18.2	0.85	26.4
Feb.	75 D semi-dull Cone	1.90	18.2	0.83	23.7
	120 D semi-dull Skein	1.90	18.8	0.90	28.1
	Cone	1.95	18.5	0.88	26.1
Mar.	120 D semi-dull Skein	1.87	19.2	0.90	29.9
	Cone	1.92	18.9	0.88	27.9
	150 D semi-dull Skein	1.91	19.3	0.90	29.6
April	120 D semi-dull Skein	1.86	19.6	0.90	30.4
	Cone	1.88	19.2	0.86	27.5

May	120 D bright				
	Skein	1.83	19.6	0.89	28.7
	Cone	1.86	19.1	0.84	25.9
	120 D semi-dull				
	Skein	1.82	19.4	0.87	29.8
	Cone	1.83	19.1	0.84	26.6
120 D dull					
Skein	1.77	18.7	0.85	28.7	
Cone	1.83	18.4	0.81	25.1	

(IV) Production Equipments.

<u>Machinery equipment</u>	<u>Type</u>	<u>Number of machine</u>
Alkali dissolving tank	10 ton/day	1
Alkali solution stock tank	45,000 L	3
	19,500 L	15
Conc alkali stock tank	45,000 L	4
Stock tank of setting alkali	12,500 L	3
Additional alkali stock tank	45,000 L	2
Recovering alkali stock tank	45,000 L	2
Mixed alkali stock tank	45,000 L	1
Adjusted alkali stock tank	45,000 L	4
Underground tank of returned alkali	16,000 L	2
Underground tank of pressed solution	12,000 L	2
Hard water softening equipments	11 m ³ /h	3
Soft water tank	3,000 L	4
Alkali evaporator	500 L/h	1
Alkali dialyser	3,000 L/day	15
Pulp punching machine	Pulp 8 ton/day	2
Steeping & pressing machine	Pulp 440 lb/batch	6
Temp. adjusting tank of normal alkali	12,000 L	2
Shredder	Pulp 484 lb/batch	3
Alkali cellulose fan	2,460 m ³ /m	3
Vacuum kneader	5,500 L	10
Vacuum tank	5,000 L	4
Viscose mixer	13,000 L	2
Viscose tank	13,800 L	22

Filter press	58 x 620 x 45	12
Washing machine	38" ϕ x 48" L 2 HP	3
Hydro extractor	500 ϕ x 350 H 5 HP	2
Carbon disulphide stock tank	25,000 L 8,000 L	2
Measuring tank of carbon disulphide	1,700 ϕ x 3,500 L	3
Air conditioning equipments	75,000 m ³ /h	4
Bath tank	8,000 L	2
Bath collection tank	65,000 L	4
Pot liquor stock tank	3,500 L	2
Zinc oxide dissolving tank	1,000 L	2
Sulphuric acid adjusting tank		2
Bath heater	410 ϕ x 1,500 x 2	4
Bath evaporator equipment	7,000 L	5
Bath crystallizer	Vertical 1,000 ϕ x 2,000 H	3
Glaubers salt dehydration tank	Na ₂ SO ₄ 3 ton/day	3
Bath filtrating tank	1,620 L	4
Spinning machine (100 nozzle)	Centrifugal type	45
Sulphuric acid stock tank	40,000 L	4
Air conditioning equipment	175,000 m ³ /h 50 HP	3
Exhaust fan	100,000 m ³ /h 20 HP	6
Reeling machine	2 skeins x 88 swift	10
" "	4 skeins x 52 swift	2
Na ₂ S circulation tank	7,500 L	2
Bleaching liquor circulation tank	7,500 L	2
Sulphuric acid circulation tank	7,000 L	2
Soap liquor circulation tank	6,250 L	2
Saponification vessel	438 L	2
Na ₂ S dissolving tank	4,200 L	1

Na ₂ S precipitation tank	13,000 L	5
Liquid chlorine synthetic dissolving tank	9,120 L	2
Skein bleaching machine	9,700 skeins/h	2
Skein dryer	2,955 skeins/h	3
Bundling machine	300 bundles/day	4
Baling machine	100 bales/day	1
Cake bleaching machine	10,776 cakes/day	2
Cake hydroextractor	240 cakes/h	5
Cake dryer	6,630 cakes/day	2
Reeling machine for cone	72 hanks	1
Cone winder	56 spindles	36

FIELD TRIP REPORT

R. P. LORD

24 June 1950

1. Purpose:

Inspection of Kurashiki Rayon Company, Kurashiki Plant.

2. Background:

Surveillance in accordance with O.D. 11, 10 April 1950.

3. Discussion:

Items under Production:

Vynylon (synthetic fiber)	30 ton per month.
Rayon Filament	450,000 lbs per month.
Vynylon Film (plastic)	2 ton per month.

Raw materials on hand at present are sufficient with the exception of pulp used in production of rayon. Pulp has previously been imported from the Scandanavian countries, but plant may be forced to use domestic pulp due to failure of efforts to exchange Japanese export items (textiles) for Scandanavian pulp.

Electric Power:

	<u>Allocation</u>	<u>Self-generated</u>	<u>Total Consumption</u>
March	1,045,976 KWH	711,900 KWH	1,757,876 KWH
April	1,450,640 "	354,250 "	1,804,890 "
May	1,425,000 "	555,950 "	1,980,950 "

Plant is at present generating approximately 30% of their total consumption.

Employees:

Male 1740 Female 706

No labor disputes reported.

4. Conclusion:

Considerable research is now underway to develop a better type of dyestuff for Vynylon, which does not respond too favorably to dyestuffs now being used. Favorable results are anticipated.

5. Recommendations: None.

R. P. LORD

D/RPL/fk

HEADQUARTERS
CHUGOKU CIVIL AFFAIRS REGION
APO 182

18 September 1950

SUBJECT: Report of Field Trip, 13 September 1950,
R. G. Stradley

TO : Chief, Economics Section

1. Purpose:

Inspection of Kurashiki Chuzo K.K., Kurashiki
City, Okayama Prefecture.

2. Reference:

None

3. Discussion:

Conferees, Mr. Yoshida, president and his staff.

a. Production

<u>Classification</u>	<u>Type of work</u>	<u>No. of employees</u>
No. 1 shop	Repair and manufactur- ing of parts of cotton and rayons weaving machines	34
No. 2 shop	Foundry for the above	16

The plant is a subcontract plant for Kurashiki
Rayon K.K. Masu Mill, Kurashiki Cotton Spinning K.K. and
Eto Orimono (Textile) K.K. of which Mr. Yoshida is con-
currently president.

The average monthly production amounts to
¥600,000.

The plant finds some difficulties in the acquisition
of steel materials, light metal alloy, copper alloy, aluminium
to be used for shaft bearing.

The plant is operating at 70% of its capacity.

4. Conclusion:

Equipment and workmanship appear to be obsolete and of poor quality.

5. Recommendation:

None

R. G. Stradley
R. G. STRADLEY